

## OCEAN GALES AND STORMS, DECEMBER, 1934—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began December—	Time of lowest barometer December—	Gale ended December—	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN													
Tarakan, Du. M. S.	Manila	Los Angeles	16 09 N.	125 31 E.	28	Sp, 28 3.	2	29.71	ENE	NE, 7	NE	ENE, 9	ENE-NE.
Comliebank, Br. M. S.	Sydney	Shanghai	9 20 N.	137 00 E.	30	1a, 1	1	28.81	NNW	NE, 12	SE	NE, 12	NNW-NE-SE.
Noumea, Pan. M. S.	Gingog, P. I.	Los Angeles	12 05 N.	128 23 E.	1	5a, 2	2	29.32	NE	NW, 8	S	W, 11	NE-NW-W.
Irisbank, Br. M. S.	San Francisco	Manila	28 50 N.	161 30 W.	3	3p, 3	6	29.78	SSW	SSW, 6	WSW	W, 9	
Gen. Sherman, Am. S. S.	Yokohama	San Francisco	46 55 N.	155 26 W.	4	6a, 4	4	28.68	SE	SE, 8	SSW	SSE, 9	ENE-SE-SSE.
Pres. Adams, Am. S. S.	Honolulu	Kobe	29 04 N.	176 45 W.	4	11a, 4	4	29.67	W	W, 8	NW	NW, 9	WNW-NW.
Jefferson Myers, Am. S. S.	Yokohama	Portland, Oregon	48 30 N.	160 28 W.	4	Noon, 4	4	28.44	NW	WNW, 9	SW	WNW, 9	NE-WNW-SW.
Comliebank, Br. M. S.	Sydney	Shanghai	21 41 N.	129 31 E.	4	6p, 4	6	29.28	SSW	SW, 9	NNW	N, 9	SW-N.
San Diego Maru, Jap. M. S.	Nigata	Los Angeles	46 11 N.	157 37 W.	5	6p, 5	6	28.28	WNW	WNW, 8	WSW	WSW, 10	N-WNW-WSW
Jefferson Myers, Am. S. S.	Yokohama	Portland, Oregon	48 25 N.	153 50 W.	5	8p, 5	6	27.76	NE	SE, 11	S	ESE, 11	NE-SE-SW.
Heian Maru, Jap. M. S.	do	Vancouver	50 42 N.	159 36 W.	5	2a, 6	5	28.05	N	W, 3	NNW	NNW, 9	NNW-W-SW.
Siljestad, Nor. M. S.	Tokuyama	San Francisco	34 55 N.	169 00 E.	6	4a, 6	7	29.47	NNW	NE, 5	WNW	WNW, 10	E-NE-W.
Fernlane, Nor. M. S.	Los Angeles	Kobe	29 53 N.	176 26 E.	6	4p, 6	6	29.70	SW	SW, 9	SW	SW, 9	Steady.
Cities Service Kansas, Am. S. S.	Balboa	Los Angeles	14 40 N.	96 00 W.	5	do	6	29.75	N	N, 7	NE	NNE, 8	N-NNE.
San Diego Maru, Jap. M. S.	Nigata	do	45 38 N.	153 48 W.	6	6p, 6	7	27.94	ESE	SSE, 9	W	SW, 12	ESE-SSE-SW.
Jefferson Myers, Am. S. S.	Yokohama	Portland, Oregon	49 15 N.	150 00 W.	6	1a, 7	7	28.34	SE	S, 11	SW	S, 11	ESE-S.
Heian Maru, Jap. M. S.	do	Vancouver	51 00 N.	151 48 W.	6	do	7	28.13	ESE	SSE, 10	SSW	S, 11	ESE-SSE-S.
Siljestad, Nor. M. S.	Tokuyama	San Francisco	35 35 N.	175 00 E.	8	6a, 8	9	29.70	NW	W, 5	NNW	NNW, 9	WSW-WNW.
Pres. Jackson, Am. S. S.	Victoria	Yokohama	52 05 N.	147 26 W.	9	6a, 11	11	29.06	ESE	NE, 8	N	N, 9	E-NE-NNE.
Fernlane, Nor. M. S.	Los Angeles	Kobe	31 03 N.	158 40 E.	11	4a, 11	11	29.75	N	N, 9	N	N, 9	Steady.
California, Am. S. S.	Balboa	San Francisco	14 37 N.	92 53 W.	12	4a, 12	12	29.92	NNW	NNW, 2	N	NNW, 8	WNW-WNW.
Tacoma, Am. S. S.	Taku Bar	Seattle	50 11 N.	170 18 W.	12	4p, 13	13	28.35	E	S, 7	SSW	ENE, 9	ENE-S-SSW.
Pres. Jackson, Am. S. S.	Victoria	Yokohama	51 22 N.	173 56 W.	13	8p, 13	15	28.73	E	N, 9	NW	E, 10	ENE-N.
Elmsport, Am. S. S.	Balboa	Los Angeles	13 18 N.	94 22 W.	13	4p, 14	15	29.92	NNW	NNE, 7	NE	NNE, 8	None.
Golden Peak, Am. S. S.	Dairen	San Francisco	39 00 N.	156 40 E.	14	9p, 14	14	29.46	SSW	SSW, 9	SW	SSW, 9	SSW-SW.
Zuiyo Maru, Jap. S. S.	Tokuyama	Los Angeles	38 32 N.	171 00 E.	16	8p, 15	16	29.53	WSW	SW, 7	WNW	WNW, 10	S-SW-WSW.
Hiye Maru, Jap. M. S.	Vancouver	Yokohama	46 49 N.	160 46 E.	17	2p, 17	17	29.45	NW	WNW, 7	NW	NW, 9	WNW-NW.
Zuiyo Maru, Jap. S. S.	Tokuyama	Los Angeles	38 40 N.	175 30 W.	17	8a, 17	17	28.67	NE	N, 11	WNW	N, 11	ENE-NE-N.
Golden Dragon, Am. S. S.	San Francisco	Yokohama	34 29 N.	170 18 W.	17	10a, 17	17	29.45	S	S, 12	W	S, 12	SSE-S-WSW.
Noumea, Pan. M. S.	Gingog	Los Angeles	35 10 N.	178 30 E.	17	Mdt, 17	18	28.79	E	SW, 3	NNW	N, 10	E-SW-N.
Sanyo Maru, Jap. M. S.	Los Angeles	Yokohama	47 02 N.	154 00 W.	18	Noon, 18	19	29.37	SW	SW, 9	W	SW, 10	Steady.
Pres. Jackson, Am. S. S.	Victoria	do	42 30 N.	151 00 E.	19	10p, 18	20	29.45	WNW	SSW, 6	NW	W, 10	S-WSW.
Pres. McKinley, Am. S. S.	do	do	49 42 N.	131 12 W.	23	3p, 23	24	29.74	WNW	WNW, 6	WNW	WNW, 9	None.
Sanyo Maru, Jap. M. S.	Los Angeles	do	46 24 N.	168 12 E.	24	Mdt, 24	25	29.69	S	S, 9	SW	S, 9	S-W.
Golden Dragon, Am. S. S.	San Francisco	do	34 19 N.	161 17 E.	25	4p, 25	25	29.63	S	S, 11	NNW	S, 11	S-W.
Atlantic, Am. S. S.	Balboa	Los Angeles	16 00 N.	95 20 W.	26	3p, 26	26	28.80	N	NNE, 8	NNE	NNE, 8	NNW-NNE-W
Aorangi, Br. M. S.	Honolulu	Victoria	40 25 N.	131 52 W.	26	6p, 26	26	29.57	WNW	WNW, 6	NNW	NNW, 8	NNW-W.
Sanyo Maru, Jap. M. S.	Los Angeles	Yokohama	42 31 N.	155 32 E.	26	11p, 26	27	29.29	N	N, 8	N	N, 8	
Noumea, Pan. M. S.	Gingog	Los Angeles	36 10 N.	135 55 W.	26	11a, 27	28	29.95	NW	NW, 8	NNW	NW, 8	Steady.
Gen. Sherman, Am. S. S.	Portland, Oregon	Yokohama	49 34 N.	174 02 E.	28	2p, 28	28	29.80	SW	SW, 8	SW	SW, 9	SW-WSW.
San Angelo, Am. S. S.	do	San Francisco	45 27 N.	124 20 W.	28	do	29	29.40	SW	SW, 7	SW	SW, 9	None.
Steelmaker, Am. S. S.	Balboa	San Diego	15 18 N.	96 06 W.	28	6a, 29	29	29.78	NNW	NNE, 2	NNW	NNW, 8	W-NNE.
Tahchee, Br. S. S.	Los Angeles	Osaka	30 30 N.	145 00 E.	29	5p, 29	30	29.54	S	SW, 9	N	W, 10	S-SW-W.
Golden Dragon, Am. S. S.	San Francisco	Yokohama	34 21 N.	144 19 E.	29	1a, 30	30	29.49	ESE	N, 11	N	NE, 12	E-N.
Hakubasan Maru, Jap. M. S.	Yokohama	Los Angeles	38 29 N.	154 55 E.	30	7p, 30	31	29.12	NE	NW, 9	W	NW, 9	NE-NW-WNW
Tyndareus, Br. S. S.	do	Victoria	40 48 N.	172 18 W.	30	1p, 31	31	29.47	SSE	S, 6	SSE	SSE, 9	
Golden Star, Am. S. S.	do	San Francisco	40 18 N.	151 10 E.	30	4p, 30	31	29.83	N	N, 7	NNW	NNW, 9	NE-N-NNW.
Pres. McKinley, Am. S. S.	Victoria	Yokohama	46 32 N.	163 38 E.	31	4p, 31	41	28.59	ENE	N, 10	WNW	N, 12	E-N.

1 Position approximate.

2 Barometer uncorrected.

3 November.

4 January.

## NORTH PACIFIC OCEAN, DECEMBER 1934

By WILLIS E. HURD

*Atmospheric pressure.*—The entire central part of the North Pacific Ocean from the tropic south of Midway Island northward through Bering Sea was mostly dominated by low pressure, the average center of which lay in the neighborhood of the eastern Aleutians. Pressures throughout this region were somewhat below the normal; but from Kodiak Island, eastward and southward along the American coast, the barometer was somewhat above the normal, with the point of greatest departure, +.11, at Juneau.

The eastern oceanic anticyclone, central off the California coast, was more than usually restricted in area for the month, due to the encroachments of the low-pressure areas from the northwestward. In Asiatic waters high pressure not only covered the coasts from Hong Kong northward to the Kurils, but also extended eastward far into the ocean.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, December 1934, at selected stations

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Point Barrow	29.94	-0.09	30.50	19	29.00	8
Dutch Harbor	29.52	-0.04	30.64	26	28.18	6
St. Paul	29.52	-0.06	30.40	27	28.56	2
Kodiak	29.63	+0.07	30.40	25	29.18	6
Juneau	29.90	+0.11	30.61	4	29.35	15
Tatoosh Island	30.03	+0.07	30.64	4	28.82	25
San Francisco	30.16	+0.04	30.49	17	29.79	27
Mazatlan	29.95	+0.02	30.00	{ 8, 13, 16, 19 }	29.88	28
Honolulu	30.00	-0.01	30.14	18	29.79	1
Midway Island	29.99	-0.02	30.28	20	29.68	6
Guam	29.84	-0.03	29.94	10	29.60	3
Manila	29.86	.00	30.02	9	29.60	2
Hong Kong	30.08	.00	30.33	6	29.91	27
Naha	30.06	.00	30.28	10	29.82	3
Chichishima	30.04	+0.04	30.28	11	29.66	5
Nemuro	30.03	-----	30.36	28	29.70	13

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

*Cyclones and gales.*—The greater number of the North Pacific cyclones of December 1934 were of oceanic origin, and fewer than the usual number of depressions of consequence for the season entered the sea from Asia. The most important of these few occurred at the end of the month, when a small cyclone of no great depth crossed Japan and, intensifying rapidly upon passing to sea, caused gales which attained a maximum force of 12 NE., late on the 29th, and of force 10–11 during the forenoon of the 30th, between Yokohama and longitude 145° E.

Practically all other gales occurring north of the Tropics, even those of the 19th, with force of 10, east of Hokushu, were associated with cyclonic activities which arose at sea and expanded eastward or westward during their fluctuations.

The month as a whole was stormy. Pressures well below 29 inches were recorded on several days; and gales exceeding force 10 were encountered on at least 8 days north of the 30th parallel.

On December 2 the Aleutian Low began to spread and deepen. By the 4th a great low-pressure system extended from the east Bering Sea far southward, with barometer down to 29.72, accompanied by a west gale, and force 8, even at Midway Island, while in 48½° N., 160½° W., the American S.S. *Jefferson Myers* was experiencing a strong northwesterly gale, barometer 28.44. On the 5th this ship, when 4° farther eastward, ran into a south gale of force 11, with lowest pressure at the unusual value of 27.76 inches. The Japanese M.S. *San Diego Maru*, on the 6th, reported a pressure reading of 27.94 inches, in conjunction with a southwest hurricane, near 46° N., 154° W. Heavy gales and low pressures continued until early on the 7th, after which the weather moderated. The field of severest storminess and lowest pressures during the period 5th to 7th extended from the eastern Aleutians southeastward to about latitude 45° N., longitude 145° W.

On the 13th to 17th the Low again deepened, and spread southward from Bering Sea toward Midway Island. Along the upper routes the wind attained forces of 9 and 10 south of the Aleutians in the early part of this period, with lowest observed pressure 28.35. On the 17th the heaviest winds (forces 11–12) were experienced along the middle routes north of Midway Island, between 180° and 170° W. On this date strong gales were encountered also to the eastward of the Kuril Islands on the northern route to Japan.

On the 25th the American S.S. *Golden Dragon*, San Francisco to Yokohama, experienced a south gale of force 11, near 34° N., 161° E., in connection with a cyclone of moderate depth in the neighborhood. This steamer on its westward voyage had the rather unique experience of not only weathering this severe gale of the 25th, but also of previously passing through the hurricane belt of the 17th north of Midway Island, and on the 29th and 30th of battling with the equally heavy cyclonic gales a day's voyage out from Yokohama.

Toward the end of December a local cyclone occurred off the Washington coast. It originated as a small depression near 49° N., 134° W., early on the 25th, and by midnight had so developed in intensity as to cause winds of force 11 at several coastal points. At North Head the extreme wind velocity on the 25th was 65 miles an hour from the south; at Tatoosh Island, it was 71 miles from south and southwest during the night of the 25th–26th, with a low barometer of 28.82 inches. The storm center hung off the coast until the 29th, and was accompanied on land by damaging rains. A few steamers reported gales of force 8–9 between the coast and 135°

W., extending as far south as the thirty-fifth parallel, on the 26th to 28th.

At the close of the month a deep and extensive cyclone raged over much of the central-western part of the northern steamship route, with winds of force 11–12 reported between 45°–50° N., 160° E. and 170° W. The American S. S. *President McKinley*, in this storm, reported a pressure of 28.59 inches, accompanied by a north hurricane.

*Typhoons.*—In an accompanying report, the Rev. Fr. Doucette describes the typhoons and depressions in the Far East during December 1934. The typhoon of November 30–December 6 was the most intense of the month at sea; and in its early stages, on December 1, had attained full hurricane strength a short distance southwest of Yap, as shown by the report of the British M.S. *Comliebank*. The ship on that date had a low barometer reading of 28.81 inches. On the 2d, as the cyclone swept up to the eastward of the Philippine Islands, the Panaman M. S. *Noumea* experienced a wind of force 11 a short distance south of the center of the storm. The M. S. *Comliebank*, bound northwest toward Shanghai after her first encounter with the storm, again entered the storm area on the 4th, after the recurve. At this time the typhoon's energy had abated, and the highest wind velocity encountered by the ship was from the north, force 9.

*Tehuantepecers.*—Owing to the frequent extensions of anticyclones of the United States into the Gulf of Mexico, an unusual amount of norther-type weather occurred in the Gulf of Tehuantepec. While the induced gales were not heavy, yet northerly winds of force 8 were experienced in the Gulf on the 6th, 12th, 14th, 20th, 26th, and 29th.

*Fog.*—Fog was of very little meteorological importance this month. It occurred on 4 days off the southern and Lower California coasts, and on a few days in widely scattered areas elsewhere over the ocean.

#### TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, NOVEMBER 1934

BERNARD F. DOUCETTE, S. J.

[Manila Observatory]

During November 1934, there were two typhoons and one depression over the regions of the Far East. The last few days of the month saw a typhoon form over the Caroline Islands and move toward the archipelago, crossing the islands in December.

*Depression, November 1 to 6.*—The depression formed November 1 in the Pacific Ocean between Palau Island and Mindanao. It moved northwest, then west (Nov. 3) across the Visayan Islands and northern Palawan. November 4 found it in the China Sea, where it changed its course to west-northwest, entering Indo-China November 6.

*Typhoon, November 10 to 19.*—Forming over the eastern Caroline Islands, this typhoon appeared November 10 about 500 miles southeast of Guam. It moved rapidly on a west-northwest course, traversing the distance to the Philippines in 4 days. On the morning of the 14th, it was close to and approaching the northern part of Samar Island. Changing to a northwest course, it crossed Samar Island between Laoang and Calbayog, passed over Legaspi, Albay Province, then west of Naga, Camarines Sur, north of Atimonan, Tayabas Province, and approached Manila, the forenoon of the 15th. About noon it passed between Infanta, Tayabas Province, and Manila, at the same time decreasing in intensity. Moving northwest, it crossed the Provinces north of Manila. It was in the